Bio-barrier prevents critters from spreading contamination

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Austin "Ray" Johnson, program manager for Integrated Biological Control, has been monitoring the interaction of Hanford operations and the environment's wildlife and vegetation for years — 20 years, to be exact.

Finding ways to eliminate such problems as contaminated tumbleweeds and fruit flies is part of his job.

"This kind of biological spread of contamination cannot be allowed," Johnson said. "This reduces our operational effectiveness, results in regulatory noncompliance and has an adverse impact on health, safety and the environment. It needs to be stopped."

A unique approach to stopping the spread of contamination through vegetation and wildlife is being tested in several places at the Hanford Site. It's an approach many gardeners who are tired of pulling weeds might try. Fabric is placed over the contaminated area. This landscape-type fabric, or bio-barrier, is impregnated with a chemical substance that inhibits root growth. With no vegetation, wildlife tends to stay out of the area and it impedes burrowing by animals.

The bio-barrier, called BioGuard II, is a product sold by a small local spin-off business, BioGuard Technologies, Inc., with research laboratories in the 300 Area. Using the bio-barrier is an option that will last for at least 15 years until the area can be permanently cleaned up.

"It's just one of the weapons in our arsenal in the fight to decrease the biological spread of contaminated material," said Johnson. "The bio-barrier is more expensive than spraying, but you can put the material down and not worry about it for years."

This area near the Plutonium Finishing Plant, previously posted as a surface contamination area, is now categorized as an "underground radioactive material area" as a result of BioGuard II, the product of a local company.

Changing categories

After the bio-barrier fabric is laid on the ground, it is covered with six inches of soil and gravel. This changes the contamination category for the area from a "surface contamination area" to an "underground radioactive material area."

"Using the bio-barrier is an interim approach, to stop the spread and loss of control of contamination until we can clean it up on a permanent basis," said Johnson.

The bio-barrier is being used sparingly for now, only covering three contaminated areas in the 200 Area, all of which have had recurring surface contamination problems.

The latest soil contamination area to be covered is on the edge of the inactive 216-A-9 Crib, an underground liquid waste disposal site near the

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Plutonium Finishing Plant. The surface contamination area was covered with the bio-barrier and gravel Nov. 1, 1999, by a team composed of Waste Management Technical Services pest-control specialists and DynCorp Tri-Cities Services radiation control technicians, nuclear chemical operators, teamsters and riggers.

Years ago, plutonium waste materials and low-level liquid waste were put into the 216-A-9 Crib. Recently, harvester ants and deep-rooted vegetation brought contamination up to the surface of the ground, creating a soil contamination area along the perimeter of the crib.

"Full remediation of the burial area will be extensive, and is years away because of more pressing priorities," said Johnson. "So, we needed to come up with a method of maintaining the area for the next 10 to 15 years."

So far, the bio-barrier material has shown to be a very effective measure for long-lasting interim use.

"We've seen no indication of resurfacing contamination at the crib yet, which is good." Johnson added, "We will continue to monitor the site, but we don't expect to see any problem."

Here, gravel is spread over the fabric bio-barrier material to keep plants and animals from foraging in the contaminated area.